

WE CLAIM:

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1 1. A method of manufacturing a disk drive formed from a head disk  
2 assembly (HDA) containing at least one magnetic disk with a magnetic surface  
3 and a head stack assembly (HSA) that includes a transducer head with a write  
4 element for writing data to the magnetic disk and a read element for reading data  
5 from the magnetic disk, the method comprising the steps of:

6 mounting the HDA in a servo track writer and moving the HSA to  
7 desired positions over the magnetic disk;  
8 measuring a width of the read element with the servo track writer;  
9 measuring a width of the write element with the servo track writer;  
10 determining a track pitch based on the measured width of the read  
11 element and the measured width of the write element; and  
12 writing servo tracks onto the magnetic disk at the determined track  
13 pitch.

1 2. The method of Claim 1 wherein the HDA carries a controller  
2 card having a microprocessor that is placed in communication with the STW  
3 when the HDA is mounted in the STW and wherein the microprocessor  
4 participates in the steps of measuring the widths of the read and write elements

1 3. The method of Claim 1 wherein the HDA is a bare HDA and  
2 wherein the STW includes independent processing capability for performing the  
3 steps of measuring the widths of the read and write elements.

1 4. The method of Claim 1, wherein the HDA contains a plurality of  
2 magnetic surfaces and corresponding transducer heads, wherein the measuring  
3 steps are performed for each transducer head to establish a collection of width  
4 measurements; and wherein the determining steps is accomplished based on  
5 the collection of width measurements.

1 5. The method of Claim 1 wherein the steps of measuring the  
2 width of the read element and the width of the write element are accomplished  
3 by:  
4 writing a calibration track with the write element;  
5 positioning the read element to a first side of the calibration track;  
6 gathering amplitude data by incrementally moving the read element  
7 from the first side of the calibration track to a second  
8 opposite side while reading data at each incremental  
9 position; and  
10 calculating the width of the read element and the width of the write  
11 element based on the amplitude data.

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1 6. The method of Claim 1 wherein the step of determining a track  
2 pitch based on the measured width of the read element and the measured width  
3 of the write element is accomplished by:  
4 establishing a nominal pair of width values;  
5 using a nominal track pitch when the measured widths are within  
6 corresponding +/- limits of the nominal pair of width values;  
7 using a narrower than nominal track pitch when the measured  
8 width of the write elements is narrower than the - limit of the  
9 nominal width value of the write element; and  
10 using a wider than nominal track pitch when the measured width of  
11 the write element is wider than the + limit of the nominal  
12 width value of the write element.

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1 7. A disk drive comprising a head disk assembly (HDA) containing  
2 at least one magnetic disk that includes a magnetic surface and a head stack  
3 assembly (HSA) that includes a transducer head with a write element for writing  
4 data to the magnetic disk and a read element for reading data from the magnetic  
5 disk, the disk drive produced using the steps of:

6 measuring a width of the read element while the HDA is in a servo  
7 track writer;

8 measuring a width of the write element while the HDA is in a servo  
9 track writer;

10 determining a track pitch based on the measured width of the read  
11 element and the measured width of the write element; and  
12 writing servo tracks onto the magnetic disk at the determined track  
13 pitch.

1 8. The disk drive of Claim 7 where the transducer head with a write  
2 element for writing data to the magnetic disk and a read element for reading data  
3 from the magnetic disk is a magneto-resistive transducer head.

1 9. The disk drive of Claim 7 wherein the HDA contains a plurality of  
2 magnetic surfaces and corresponding transducer heads, wherein the measuring  
3 steps are performed for each transducer head to establish a collection of width  
4 measurements; and wherein the determining steps is accomplished based on  
5 the collection of width measurements.

1 10. The disk drive of Claim 7 wherein the steps of measuring the  
2 width of the read element and the width of the write element are accomplished  
3 by:  
4 writing a calibration track with the write element;  
5 positioning the read element to a first side of the calibration track;  
6 gathering amplitude data by incrementally moving the read element  
7 from the first side of the calibration track to a second  
8 opposite side while reading data at each incremental  
9 position; and  
10 calculating the width of the read element and the width of the write  
11 element based on the amplitude data.

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11. A method of measuring a width of a read element and a width  
of a write element contained within a disk drive formed from a head disk  
assembly (HDA) containing at least one magnetic disk with a magnetic surface  
and a head stack assembly (HSA) that includes a transducer head formed from  
the read and write elements, the method comprising the steps of  
writing a calibration track with the write element;  
positioning the read element to a first side of the calibration track;  
gathering amplitude data by incrementally moving the read element  
from the first side of the calibration track to a second  
opposite side while reading data at each incremental  
position; and  
calculating the width of the read element and the width of the write  
element based on the amplitude data.

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